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* Title: Validation of High-Fidelity CFD/CAA Framework for Launch Vehicle Acoustic Environment Simulation against Scale Model Test Data		
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Primary Author (NOTE: will receive all correspondence regarding participation in this program and is assumed to be presenter)		
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Unclassified Abstract (250 – 300 words; do not include figures or tables)

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A hybrid Computational Fluid Dynamics and Computational Aero-Acoustics (CFD/CAA) modeling framework has been developed for launch vehicle liftoff acoustic environment predictions. The framework couples the existing highly-scalable NASA production CFD code, Loci/CHEM, with a high-order accurate discontinuous Galerkin solver developed in the same production framework, Loci/THRUST, to accurately resolve and propagate acoustic physics across the entire launch environment. Time-accurate, Hybrid RANS/LES CFD modeling is applied for predicting the acoustic generation physics at the plume source, and a high-order accurate unstructured discontinuous Galerkin (DG) method is employed to propagate acoustic waves away from the source across large distances using high-order accurate schemes. The DG solver is capable of solving 2nd, 3rd, and 4th order Euler solutions for non-linear, conservative acoustic field propagation. Initial application testing and validation has been carried out against high resolution acoustic data from the Ares Scale Model Acoustic Test (ASMAT) series to evaluate the capabilities and production readiness of the CFD/CAA system to resolve the observed spectrum of acoustic frequency content. This paper presents results from this validation and outlines efforts to mature and improve the computational simulation framework.

Audio-Visual Requirements and Room Setup

Standard equipment supplied in each meeting room includes: Laptop (with sound), LCD Projector (minimum 1024 x 768 native resolution and 4500 lumens), Screen, Podium Microphone, Wireless Lavalier Microphone. Rooms are typically set in “Theater” style (rows of chairs). **If your presentation requires any unusual A-V equipment or set-up, please indicate those requirements below.**

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- By submitting an abstract, you agree to both complete a final paper for publication and to attend the meeting to present this information.
- Direct questions to Shelley Cohen, by phone at 410.992.7302 x 215, or email to scohen@erg.jhu.edu.